XC Lights

ALIGNMENT INSTRUCTIONS FOR GRS HIGHWAY CROSSING SIGNAL LIGHT UNITS

INTRODUCTION

The lamp receptacle in a GRS Type XC crossing signal light unit, Figure 1, is carefully positioned at the factory to precisely locate the lamp filament on the optical center line at the reflector's focal point, thus producing maximum brilliance. Use GRS precision filament lamps only. Do not change the positioning of the lamp receptacle and/or reflector.

The following instructions are for alignment of signal units equipped with 30° Spredlite roundels having a 15° downward deflection. If physical obstructions at the crossing present difficulties, it may be necessary to use other roundels. See "Exceptions".

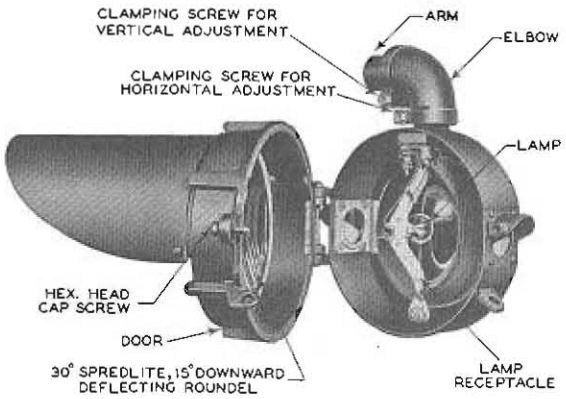

Figure 1. Type XC crossing signal unit.

ALIGNMENT PROCEDURE

Arrange for a watchman to hand flag the crossing during the following procedures.

Front Light Units

1. Apply energy to the front light unit to be aligned. The front light units face oncoming vehicular traffic in the right-hand lane.
2. Unscrew the hex-head cap screw, Figure 1, and open the door as far as possible so a clear beam is displayed.
3. Loosen the clamping screw at the bottom of the elbow.
4. Locate a man (observer) 400 feet in approach to the signal and in the center of the right-hand highway lane.
5. Swing the light unit back and forth in the horizontal plane several times so that the observer can recognize the difference between the edge of the beam and the bright portion.
6. Swing the light unit horizontally until it is at the exact point where the observer just ceases to see the beam. Make a vertical pencil mark across the edge of the elbow and onto the pipe nipple which is part of the light unit case. Next, swing the light unit horizontally in the opposite direction until the observer just ceases to see the beam. Make a vertical pencil mark on the edge of the elbow opposite the mark on the nipple. Divide the distance between the two vertical marks on the elbow in half and make a vertical pencil mark at this point. Swing the light unit back so the vertical mark on the nipple and the half-way mark on the elbow are lined up. Tighten the clamping screw.
7. Loosen the clamping screw at the top of the elbow.
8. Adjust light unit vertically to align the centerline of the beam 5 feet 6 inches above the pavement at 400 feet in approach to the signal as outlined below. (This will place the hot-spot of the beam above the eye-level of automobile drivers but not above the eye-level of truck and bus drivers.) Swing the light unit down in a vertical plane until the light unit is at the exact point where the observer just ceases to see the beam. Make a horizontal pencil mark across the edge of the elbow and the arm. Next, swing the light unit up in a vertical plane until the observer just ceases to see the beam. Make a horizontal pencil mark on the arm opposite the mark on the elbow. Divide the distance between the two horizontal marks on the arm in half and make a horizontal pencil mark at this point. Swing the light unit back so the horizontal mark on the elbow and the half-way mark on the arm are lined up. Tighten the clamping screw at the top of the elbow.
9. Close and fasten the door with the hex-head cap screw.
10. Repeat the procedure outlined in steps 1 through 8 on other front light units.

Back Light Units

All back light units are aligned exactly the same as the front light units except that the man observing the light beam should move from his 400 foot station up the same line 350 feet to a station 50 feet in approach to the near signal on which front light alignment has just been completed.

Final Check

With the lights flashing and the lamps burning at recommended voltage, check that maximum visibility is obtained at 400 feet and adequate visibility at 1500 feet for the front light units, and that maximum visibility is obtained at 50 feet and adequate visibility at 400 feet for the back light units.

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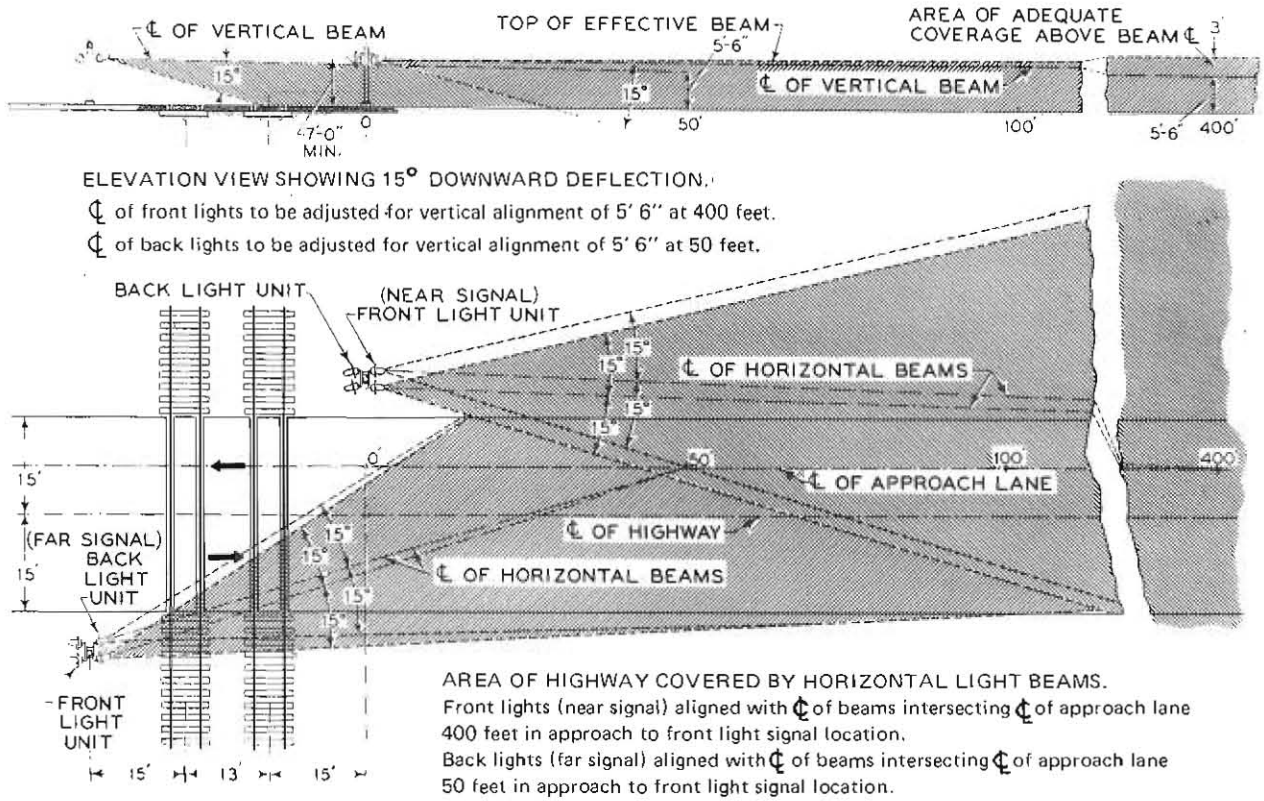
℄ OF VERTICAL BEAM
TOP OF EFFECTIVE BEAM
5'-6"
AREA OF ADEQUATE COVERAGE ABOVE BEAM ℄
3'
15°
℄ OF VERTICAL BEAM
4'-0" MIN.
0
50'
100'
5'-6"
400'
ELEVATION VIEW SHOWING 15° DOWNWARD DEFLECTION.
℄ of front lights to be adjusted for vertical alignment of 5' 6" at 400 feet.
℄ of back lights to be adjusted for vertical alignment of 5' 6" at 50 feet.
BACK LIGHT UNIT
(NEAR SIGNAL) FRONT LIGHT UNIT
℄ OF HORIZONTAL BEAMS
℄ OF APPROACH LANE
℄ OF HIGHWAY
℄ OF HORIZONTAL BEAMS
(FAR SIGNAL) BACK LIGHT UNIT
FRONT LIGHT UNIT
15'
13'
AREA OF HIGHWAY COVERED BY HORIZONTAL LIGHT BEAMS.
Front lights (near signal) aligned with ℄ of beams intersecting ℄ of approach lane 400 feet in approach to front light signal location.
Back lights (far signal) aligned with ℄ of beams intersecting ℄ of approach lane 50 feet in approach to front light signal location.

Figure 2. Correct alignment for signal units with 30° Spredlite roundel having 15° downward deflection.

EXCEPTIONS

Local conditions, which limit the speed of approaching traffic or distance at which the signals can be seen by drivers of vehicles approaching the crossing, may make it desirable to align the signal light units in a manner differing from that shown in Figure 2 and, in addition, may require the use of other roundels. As shown in the following table and in Figure 3, there are five roundels to choose from, giving beam coverage fitted to the needs of each particular crossing. If you do not have the proper roundel, see GRS Catalog Section P73 for ordering information.

Roundel Number	Suggested Uses	Total Spread	Downward Deflection
1	Flat highway approach	30°	
2	Approach grade	30°	15°
3	Cantilever signals	20°	32°
4	Rolling and curving highway approach	160°	12°
5	Rear light units	70°	

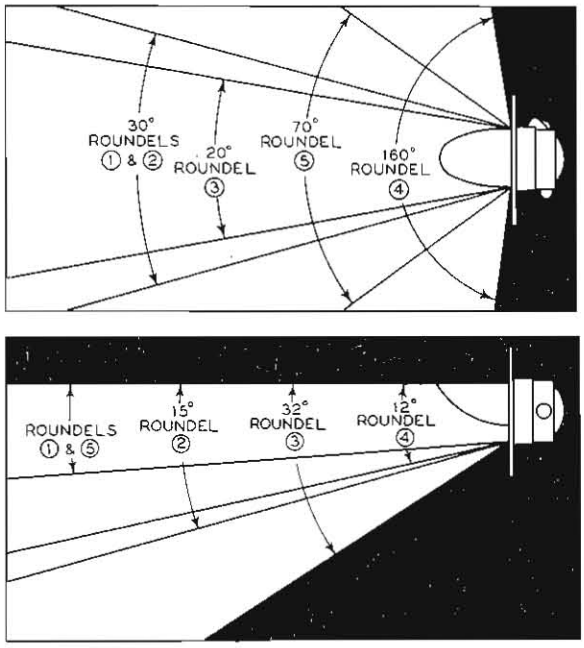

Figure 3. A choice of 5 different roundels is available.

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